Site-Specific Safety and Health Plan

Fenced Area at Range J - Pelham Range, Parcel 202(7)

Supplemental Remedial Investigation

Final
Site-Specific Safety and Health Plan Attachment for the Fenced Area at Range J - Pelham Range, Parcel 202(7)

Fort McClellan
Calhoun County, Alabama
EPA ID No. AL7 210 020 562

Prepared for:

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Delivery Order CK005
Contract No. DACA21-96-D-0018
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November 1998

Revision 0

This Site-Specific Safety and Health Plan must be used in conjunction with the Installation-Wide Safety and Health Plan, Fort McClellan, Alabama.

Site-Specific Safety and Health Plan Attachment Approval
Fort McClellan, Calhoun County, Alabama

I have read and approve this site-specific safety and health plan attachment for the Fenced Area at Range J – Pelham Range, Parcel 202(7), at Fort McClellan, Alabama, with respect to project hazards, regulatory requirements, and IT Corporation procedures.

Jeanne Yacoub, PE
Project Manager

3 November 1998
Date

Michael Henderson, CIH
Health & Safety Manager

3 November 1998
Date

Jim Pastorick
UXO Specialist

3 November 1998
Date

Jeff Tarr
Site Coordinator

3 November 98
Date

Acknowledgements

The final approved version of this site-specific safety and health plan (SSHP) attachment for the Fenced Area at Range J – Pelham Range, Parcel 202(7), at Fort McClellan, Alabama, has been provided to the site coordinator. I acknowledge my responsibility to provide the site coordinator with the equipment, materials, and qualified personnel to implement fully all safety requirements in this SSHP attachment. I will formally review this plan with the health and safety staff every 6 months until project completion.

Project Manager

3 November 1998
Date

I acknowledge receipt of this SSHP attachment from the project manager, and that it is my responsibility to explain its contents to all site personnel and cause these requirements to be fully implemented. Any change in conditions, scope of work, or other change that might affect worker safety requires me to notify the project manager and/or the health and safety manager.

Agnes Manjels for Jeff Tarr
Site Coordinator

3 November 98
Date

Site-Specific Safety and Health Plan
Acknowledgement Form

I have been informed of, and will abide by the procedures set forth in, this site-specific safety and health plan attachment for the activities for the Fenced Area at Range J – Pelham Range, Parcel 202(7), at Fort McClellan, Calhoun County, Alabama.

Printed Name	***Signature***	***Representing***	***Date***

Fort McClellan Gate Hours

Baltzell Gate	Baltzell Road. Open 24 hours daily, 7 days a week.

Fort McClellan Project Emergency Contacts

Fire Department (on post)	Ext. 17
Fire Department (off post)	(205) 820-1117
Ambulance (on post)	Ext. 12
Ambulance (off post)	(205) 848-2315
Military Police (on post)	Ext. 5-3821
Military Police (off post)	(205) 848-5555
Regional Medical Center	(205) 235-5121
Chemical Agent Emergencies	Ext. 17
UXO Emergencies	Ext. 17
UXO Nonemergencies/Reporting Only (Ronald Levy)	(205) 848-3758
National Response Center	(800) 424-8802
Poison Control Center	(800) 462-0800
EPA Region IV	(404) 562-8725
Ronald Levy, Chief, FTMC Environmental Management	(205) 848-3758
Ellis Pope, U.S. Army Corps of Engineers	(334) 690-3077
Jeanne Yacoub, IT Project Manager	(423) 690-3211
Michael Henderson, IT H&S Manager	(423) 690-3211
Dr. Elaine Theriault, IT Occupational Physician	(800) 229-3674

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BZ	breathing zone
CWA	chemical warfare agent
FTMC	Fort McClellan
IT	IT Corporation
PPE	personal protective equipment
SHP	installation-wide safety and health plan
SSHO	site safety and health officer
SSHP	site-specific safety and health plan
UXO	unexploded ordnance

1.0 Site Work Plan Summary

Project Objective. The objective of this investigation at Fort McClellan (FTMC), Calhoun County, Alabama is to collect and analyze samples at the Fenced Area at Range J – Pelham Range, Parcel 202(7).

Project Tasks

- Collect 24 surface soil samples.
- Collect 24 subsurface soil samples.
- Install 13 groundwater monitoring wells.
- Collect 16 groundwater samples.

Personnel Requirements. Up to 15 employees.

Note: All personnel on this site shall have received training, informational programs, and medical surveillance as outlined in the installation-wide safety and health plan (SHP) for site investigations at FTMC, and be familiar with the requirements of this site-specific SHP (SSHP). This SSHP must be used in conjunction with the SHP, Fort McClellan, Alabama.

2.0 Site Characterization and Analysis

2.1 Anticipated Hazards

The activity hazard analysis in Chapter 5.0 contains project-specific practices utilized to reduce or eliminate anticipated site hazards. The activity hazard analysis indicates specific chemical and physical hazards that may be present and encountered during each task from on-site operations. Below each task is a list of hazards and specific actions that will be taken to control the respective hazards. These control measures may include work practice controls, engineering controls, and/or use of appropriate personal protective equipment (PPE).

The Fenced Area at Range J is located in the northcentral portion of Pelham Range. The site is approximately 60 feet wide (north to south) by 150 feet long (east to west) and is bounded on all sides by a chain link fence. Corroded drums containing soil were disposed in a surface pit located inside the chain link fence. The surface pit is located in the northwest section of the site and is approximately 10 feet wide (north to south) by 40 feet long (east to west). The study area is approximately 0.2 acres, but the fenced area is a small portion of a larger training area reportedly in use since 1954. This larger training area is approximately 60 acres and is located immediately around the chain link fence.

Table 2-1 contains the toxicological and physiological properties of chemicals anticipated or to be used at Fenced Area at Range J – Pelham Range.

The presence of unexploded ordnance (UXO) and chemical warfare agents (CWA) is suspected at the Fenced Area at Range J - Pelham Range.

2.2 General Site Information

Location of Site. The Fenced Area at Range J is located in the northcentral portion of Pelham Range.

Duration of Planned Employee Activity. Employee activity duration is 2 months.

Site Topography and Size. The site occupies an area of approximately 0.2 acres, with ground sloping to the northwest.

Table 2-1

Toxicological and Physical Properties of Chemicals
Fenced Area at Range J – Pelham Range, Parcel 202(7)
Fort McClellan, Calhoun County, Alabama

Substance [CAS]	IP[a] (eV)	Odor Threshold (ppm)	Route[b]	Symptoms of Exposure	Treatment	TWA[c]	STEL[d]	Source[e]	IDLH (NIOSH)[f]
Acetone [67-64-1]	9.7	13–100	Inh Ing Con	Irritated eyes, nose, and throat; headache, dizziness; dermatitis.	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention	750 ppm 750 ppm 250 ppm	1,000 ppm 1,000 ppm	PEL TLV REL	20,000 ppm
Carbon Tetrachloride [56-23-5]	11.47ev	NA	Inh Ing Con	Irritates eyes, skin; liver and kidney damage; nausea, vomiting, drowsiness, dizziness. Carcinogenic.	Eye: Irrigate immediately Skin: Soap wash promptly Breath: Respiratory support Swallow: Immediate medical attention	10 ppm -- --	C25 ppm 2 ppm --	PEL TLV REL	Ca 200 ppm
Fuel oil (diesel oil, medium)	?	?	Ing Inh Con	Ingestion causes nausea, vomiting, and cramps; depressed central nervous system, headache, coma, death; pulmonary irritation; kidney and liver damage; aspiration causes severe lung irritation, coughing, gagging, dyspnea, substernal stress, pulmonary edema; bronchopneumonia; excited, then depressed, central nervous system.	Eye: Irrigate promptly Skin: Soap wash Breath: Respiratory support Swallow: Immediate medical attention Aspiration: Immediate medical attention			PEL TLV REL	

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Toxicological and Physical Properties of Chemicals
Fenced Area at Range J – Pelham Range, Parcel 202(7)
Fort McClellan, Calhoun County, Alabama

Substance [CAS]	IP[a] (eV)	Odor Threshold (ppm)	Route[b]	Symptoms of Exposure	Treatment	TWA[c]	STEL[d]	Source[e]	IDLH (NIOSH)[f]
Gasoline [8006-61-9]	?	0.3	Inh Ing Con	Intoxication, headaches, blurred vision, dizziness, nausea; eye, nose throat irritation; potential kidney and other cancers. Carcinogenic.	Eye: Irrigate immediately (15 min) Skin: Soap wash promptly Breath: Respiratory support Swallow: Immediate medical attention	300 ppm 300 ppm Ca, lowest feasible conc. (LOQ 15 ppm)	500 ppm 500 ppm	PEL TLV REL	?
n-Hexane [110-54-3]	10.18	65–248	Inh Ing Con	Lightheadedness; nausea, headache; numbness of the extremities, muscular weakness; irritation of the eyes and nose; dermatitis; chemical pneumonia; giddiness.	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention	50 ppm 50 ppm 50 ppm		PEL TLV REL	5,000 ppm
Isopropyl alcohol (isopropanol) [67-63-0]	10.16	43–200	Inh Ing Con	Mild irritation of the eyes, nose, and throat; drowsiness, dizziness, headache; dry, cracked skin.	Eye: Irrigate immediately Skin: Water flush Breath: Respiratory support Swallow: Immediate medical attention	400 ppm 400 ppm 400 ppm	500 ppm 500 ppm 500 ppm	PEL TLV REL	12,000 ppm
Motor Oil [NA]	?	?	Inh Ing	Irritated eyes, skin, respiratory system; usually only a problem if misted or ingested.	Eye: Irrigate immediately (15 min) Skin: Soap wash immediately Swallow: Immediate medical attention			PEL TLV REL	
Nitric acid [7697-37-2]	11.95	0.3–1	Inh Ing Con	Irritated eyes, mucous membranes, and skin; delayed pulmonary edema, pneumonitis, bronchitis; dental erosion.	Eye: Irrigate immediately Skin: Water flush promptly Breath: Respiratory support Swallow: Immediate medical attention	2 ppm 2 ppm 2 ppm	4 ppm 4 ppm 4 ppm	PEL TLV REL	100 ppm

Table 2-1

Toxicological and Physical Properties of Chemicals
Fenced Area at Range J – Pelham Range, Parcel 202(7)
Fort McClellan, Calhoun County, Alabama

Substance [CAS]	IP[a] (eV)	Odor Threshold (ppm)	Route[b]	Symptoms of Exposure	Treatment	TWA[c]	STEL[d]	Source[e]	IDLH (NIOSH)[f]
Portland cement			Inh	Fine gray powder that can be irritating if inhaled or in eyes.	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention		10 mg/m^3 10 mg/m^3/ total dust 5 mg/m^3 respirable fraction	TLV PEL/REL	
Sodium hydroxide [1310-73-2]	NA	NA	Inh Ing Con	Irritated nose; pneumonitis; burns eyes, and skin; temporary loss of hair.	Eye: Irrigate immediately Skin: Water flush immediately Breath: Respiratory support Swallow: Immediate medical attention		C2 mg/m^3 C2 mg/m^3 C2 mg/m^3	PEL TLV REL	250 mg/m^3
Sulfuric acid [7664-93-9]	?	0.15	Inh Ing Con	Irritated eyes, nose, and throat; pulmonary edema, bronchitis; emphysema; conjunctivitis; stomatitis; dental erosion; tracheobronchitis; skin and eye burns; dermatitis.	Eye: Irrigate immediately Skin: Water flush immediately Breath: Respiratory support Swallow: Immediate medical attention	1 mg/m^3 1 mg/m^3 1 mg/m^3	3 mg/m^3	PEL TLV REL	80 mg/m^3

[a]IP = Ionization potential (electron volts).
[b]Route = Inh, Inhalation; Abs, Skin absorption; Ing, Ingestion; Con, Skin and/or eye contact.
[c]TWA = Time-weighted average. The TWA concentration for a normal work day (usually 8 or 10 hours) and a 40-hour work week, to which nearly all workers may be repeatedly exposed, day after day without adverse effect.
[d]STEL = Short-term exposure limit. A 15-minute TWA exposure that should not be exceeded at any time during a workday, even if the TWA is not exceeded.
[e]PEL = Occupational Safety and Health Administration (OSHA) permissible exposure limit (29 CFR 1910.1000, Table Z).
AEL = Airborne Exposure Limit.
TLV = American Conference of Governmental Industrial Hygiene (ACGIH) threshold limit value—TWA.
REL = National Institute for Occupational Safety and Health (NIOSH) recommended exposure limit.
[f]IDLH (NIOSH)—Immediately dangerous to life or health (NIOSH). Represents the maximum concentration from which, in the event of respirator failure, one could escape within 30 minutes without a respirator and without experiencing any escape-impairing or irreversible health effects.
NE = No evidence could be found for the existence of an IDLH (NIOSH Pocket Guide to Chemical Hazards, Pub. 1998).
C = Ceiling limit value which should not be exceeded at any time.
Ca = Carcinogen.
NA = Not applicable.

Table 2-1

Toxicological and Physical Properties of Chemicals
Fenced Area at Range J – Pelham Range, Parcel 202(7)
Fort McClellan, Calhoun County, Alabama

? = Unknown.
LEL = Lower explosive limits.
LC_{50} = Lethal concentration for 50 percent of population tested.
LD_{50} = Lethal dose for 50 percent of population tested.
NIC = Notice of intended change (ACGIH).

References:

American Conference of Governmental Industrial Hygienists Guide to Occupational Exposure Values, 1998, compiled by the American Conference of Governmental Industrial Hygienists.
Amoore, J. E. Hautula, "Odor as an Aid to Chemical Safety," Journal of Applied Toxicology, 1983.
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Lewis, Richard J., Sr., 1992, Sax's Dangerous Properties of Industrial Materials, 8th ed., Van Nostrand Reinhold, New York.
Micromedex Tomes Plus (R) System, 1992, Micromedex, Inc.
National Institute for Occupational Safety and Health Pocket Guide to Chemicals, Pub. 1998, National Institute for Occupational Safety and Health.
Odor Threshold for Chemicals with Established Occupational Health Standards, American Industrial Hygiene Association, 1989.
Respirator Selection Guide, 3M Occupational Health and Safety Division, 1993.
Verschuseren, K., Handbook of Environmental Data on Organic Chemicals, Van Nostrand and Reinhold, 1977.
Warning Properties of Industrial Chemicals—Occupational Health Resource Center, Oregon Lung Association.
Workplace Environmental Exposure Levels, American Industrial Hygiene Association, 1992.

Pathways for Hazardous Substance Dispersion. Possible pathways for hazardous substances in the area are groundwater and soils.

3.0 Personal Protective Equipment

The work activities will begin in the following levels of protection. Also, a completed description of Level D, Modified Level D, and Level C PPE is provided.

Task	Initial Level of PPE
Staging equipment	Level D
Collecting samples	Modified Level D*
Install monitoring wells	Modified Level D*

*Initial level will be raised to Level C or higher if air monitoring results in the worker's breathing zone (BZ) are greater than action levels.

Level D. The minimal level of protection that will be required of IT personnel at the site will be Level D. The following equipment will be used for Level D protection:

- Coveralls or work clothing
- Leather work gloves (when necessary)
- Steel-toed safety boots
- Safety glasses
- Hard hat
- Hearing protection (when working near/adjacent to operating equipment).

Modified Level D. The following equipment will be used for Level D-Modified protection:

- Permeable Tyvek, Kleenguard, or its equivalent (Saran-coated tyvek where chemical agents are anticipated)
- Latex boot covers
- Nitrile, heavy work, or latex gloves
- Steel-toed safety boots
- Safety glasses
- Hard hat

- Hearing protection (when working near/adjacent to operating equipment)
- Escape/egress air supply pack (where chemical agents are suspected).

Note: In addition to modifying Level D PPE, the operator of high-pressure water jetting equipment shall wear metatarsal guards for the legs and feet.

Level C. Level C protection will not be used unless air-monitoring data indicate the need for upgrade; however, the equipment shall be readily available on site. The following equipment will be used for Level C protection:

- National Institute of Occupational Safety and Health/Mine Safety and Health Administration-approved full-face, air-purifying respirators equipped with organic vapor/acid gas cartridge in combination with high-efficiency particulate air filter
- Hooded, Saran-coated Tyvek, taped at gloves, boots, and respirator
- Nitrile gloves (outer)
- Latex or lightweight nitrile gloves (inner)
- Neoprene steel-toed boots or polyvinyl chloride overbooties/steel-toed safety boots
- Hard hat
- Hearing protection (when working near/adjacent to operating equipment)
- Escape/egress air supply pack (where chemical agents are suspected).

Note: In addition to Level C PPE, the operator of high-pressure water jetting equipment shall wear metatarsal guards for the legs and feet.

4.0 Site Monitoring

The environmental contaminants of concern resulting from the Fenced Area at Range J – Pelham Range operations are diesel fuels, gasoline, and carbon tetrachloride. Table 4-1 contains action levels for site monitoring at the Fenced Area at Range J – Pelham Range.

Chemical. Monitoring will be performed by the site safety and health officer (SSHO) during the performance of ground intrusive operations. A calibrated flame ionization detector (i.e., OVA 128 or equivalent) organic vapor analyzer will be utilized to monitor the sampling locations and BZs to determine if any organic material may be present that would necessitate upgrading of protection level. A calibrated combustible gas/oxygen indicator will be utilized to monitor the work areas and BZs to determine if any combustible/flammable oxygen levels may be present that would necessitate evacuation of the work area. Table 4-2 contains the air monitoring frequency and location for site monitoring at the Fenced Area at Range J.

Chemical Warfare Agents. Monitoring will be performed by Quanterra Battle Quicksilver during drilling activities. Calibrated equipment will be utilized to monitor the drilling locations to determine if any CWAs may be present that would necessitate excavation of the area.

Unexploded Ordnance. The UXO specialists will perform UXO avoidance sweeps prior to moving the heavy equipment onto the site. During this operation, UXO on the surface will be detected and marked for avoidance during field operations. Additionally, downhole magnetometer surveys will be performed to detect metal objects in the path of the boring apparatus. The boring location will be moved to avoid subsurface metal objects.

If UXO is encountered, personnel will contact the site manager and UXO specialist immediately. Personnel will evacuate the immediate area and secure it.

Table 4-1

Action Levels
Fenced Area at Range J – Pelham Range, Parcel 202(7)
Fort McClellan, Calhoun County, Alabama

When in Level C PPE

Analyte	Action Level	Required Action[a]
VOHs	≥ 10 ppm above background in breathing zone (BZ)	Stop work, evacuate work area, upgrade to Level B.
Oxygen	≥ 20%, <23% < 20%, >23%	Normal operations. Stop work, evacuate work area.
Flammable vapors	≥ 10% LEL < 10% LEL	Stop work, evacuate work area. Continue operations, monitor for VOCs.

When in Level D Modified/D PPE

Analyte	Action Level	Required Action[b]
VOHs	≥ 5 ppm above background in BZ	Stop activities, suspend work activities for 15 to 30 minutes, if readings are sustained then upgrade to Level C PPE.
Oxygen	≥ 20%, <23% < 20%, >23%	Normal operations. Stop work, evacuate work area.
Flammable vapors	≥ 10% LEL < 10% LEL	Stop work, evacuate work area. Continue operations, monitor for VOCs.

Note: Quanterra Battelle Quicksilver will conduct environmental monitoring for chemical warfare agents (CWA). If CWAs are encountered or if "ring off" occurs, site personnel will don escape/egress air supply packs and evacuate the site immediately. Personnel will decontaminate using a bleach solution.

Table 4-1

Action Levels
Fenced Area at Range J – Pelham Range, Parcel 202(7)
Fort McClellan, Calhoun County, Alabama

When in Support Zone

Analyte	Action Level	Required Action
VOHs	≥ 1 ppm above background in BZ	Evacuate support zone and re-establish perimeter of exclusion zone.

[a] Four instantaneous peaks in any 15-minute period or a sustained reading for 5 minutes in excess of the action level will trigger a response.

[b] Contact with the H&S manager must be made prior to continuance of work. The H&S manager may then initiate perimeter/integrated air sampling along with additional engineering controls.

No one is permitted to downgrade levels of PPE without authorization from the H&S manager.

Table 4-2

Air Monitoring Frequency and Location
Fenced Area at Range J – Pelham Range
Parcel 202(7)
Fort McClellan, Calhoun County, Alabama

Work Activity	Instrument	Frequency	Location
Staging equipment	OV Monitor	Initially for area	Breathing zone (BZ) of employees
Sampling (groundwater and soil)	OV Monitor LEL/O_2 Monitor	Continuously Continuously	BZ of employees Support zone
Installing monitoring wells	OV Monitor LEL/O2 Monitor	Continuously Continuously	BZ of employees BZ of employees

OV = Organic vapor.
LEL/O_2 = Lower explosive level/oxygen.

5.0 Activity Hazard Analysis

The attached activity hazard analysis (Table 5-1) is provided for the following activities:

- Setup of equipment and general field activities
- Soil and groundwater sampling
- Installation of monitoring wells.

All injuries and illnesses must be immediately reported to the site manager or the SSHO, who will then notify off-site personnel and organizations as necessary.

If hospital care must be provided, the victim shall be treated at Northeast Regional Medical Center. Directions to the hospital are provided in Figure 1-1.

Table 5-1

Activity Hazard Analysis
Fenced Area at Range J – Pelham Range, Parcel 202(7)
Fort McClellan, Calhoun County, Alabama

Activity	Potential Hazards	Recommended Controls
Staging Equipment	Slip, trip, and fall hazards	• Determine best access route before transporting equipment. • Practice good housekeeping; keep work area picked up and clean as feasible. • Continually inspect the work area for slip, trip, and fall hazards. • Look before you step; ensure safe and secure footing.
	Heavy lifting	• Use proper lifting techniques. Lifts greater than 60 pounds require assistance or mechanical equipment.
	Falling objects	• Stay alert and clear of materials suspended overhead; wear hard hat and steel-toed boots.
	Flying debris, dirt, dust, etc.	• Wear safety glasses/goggles; ensure that eye wash is in proper working condition.
	Pinch points	• Keep hands, fingers, and feet clear of moving/suspended materials and equipment. • Beware of contact points. • Stay alert at all times!
	Cuts/bruises	• Use cotton or leather work gloves for material handling.
	Bees, spiders, and snakes	• Inspect work area carefully and avoid placing hands and feet into concealed areas.
	Ticks	• Wear light colored clothing (can see ticks better). • Mow vegetated and small brush areas. • Wear insect repellant. • Wear long sleeves and long pants. • Visually check oneself promptly and frequently after exiting the work area.
	Fire	• Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.
	Hazard communication	• Label all containers as to contents and dispose of properly. • Ensure Material Safety Data Sheets (MSDS) are available for hazardous chemicals used on site.

Table 5-1

Activity Hazard Analysis
Fenced Area at Range J – Pelham Range, Parcel 202(7)
Fort McClellan, Calhoun County, Alabama

Activity	Potential Hazards	Recommended Controls
Staging Equipment (continued)	Noise	• Sound levels above 85 decibels (dBA) mandates hearing protection.
	Lighting	• Adequate lighting will be provided to ensure a safe working environment.
	Cold stress	• Workers should wear insulated clothing when temperatures drop below 40 degrees Fahrenheit (°F). • Drink warm beverages on breaks. Refrain from drinking caffeinated beverages. • Remove wet clothing promptly. • Take breaks in warm areas. • Reduce work periods as necessary. • Layer work clothing.
	Poison ivy/oak/sumac	• Avoid plant areas if possible. • Wear long sleeves and long pants. • Promptly wash clothing that has contacted poisonous plants. • Wash affected areas immediately with soap and water.
	Heat rash	• Keep the skin clean and dry. • Change perspiration-soaked clothing, as necessary. • Bathe at end of work shift or day. • Apply powder to affected area.
	Heat cramps	• Drink plenty of cool fluids even when not thirsty. • Provide cool fluid for work crews. • Move victim to shaded, cool area.
	Heat exhaustion	• Conduct physiological worker monitoring as needed (i.e., heart rate, oral temperature). • Set up work/rest periods. • Use the "buddy system." • Allow workers time to acclimate. • Have ice packs available for use. • Take frequent breaks.

Table 5-1

Activity Hazard Analysis
Fenced Area at Range J – Pelham Range, Parcel 202(7)
Fort McClellan, Calhoun County, Alabama

Activity	Potential Hazards	Recommended Controls
Staging Equipment (continued)	Heat stroke	• Evaluate possibility of night work. • Perform physiological monitoring on workers during breaks. • Wear body cooling devices.
	Contact with moving equipment/vehicles	• Work area will be barricaded/demarcated. • Equipment will be laid out in an area free of traffic flow. • Barricades shall be used on or around work areas when it is necessary to prevent the inadvertent intrusion of pedestrian traffic. • Barriers shall be used to protect workers from vehicular traffic. • Barriers shall be used to guard excavations adjacent to streets or roadways. • Flagging shall be used for the short term (less than 24 hours) to identify hazards until proper barricades or barriers are provided. • Heavy equipment shall have backup alarms.
	Forklift operations	• Use qualified and trained forklift operators. • The operator shall not exceed the load capacity rating for the forklift. • The load capacity shall be clearly visible on the forklift. • Forklift operators shall inform their supervisor of any prescribed medication that they are taking that would impair their judgement.
	Portable electric tools	• Portable electric tools that are unsafe due to faulty plugs, damaged cords, or other reasons, shall be tagged (do not use) and removed from service. • Portable electric tools and all cord and plug connected equipment shall be protected by a ground-fault circuit interrupter (GFCI) device. • Electrical tools shall be inspected daily prior to use.

Table 5-1

Activity Hazard Analysis
Fenced Area at Range J – Pelham Range, Parcel 202(7)
Fort McClellan, Calhoun County, Alabama

Activity	Potential Hazards	Recommended Controls
Staging Equipment (continued)	Extension cords	• Extension cords that have faulty plugs, damaged insulation, or are unsafe in any way shall be removed from service. • Cords shall be protected from damage from sharp edges, projections, pinch points (doorways), and vehicular traffic. • Cords shall be suspended with a nonconductive support (rope, plastic ties, etc,). • Cords shall be designed for hard duty. • Cords shall be inspected daily.
	Lightning strikes	• Whenever possible, halt activities and take cover. • If outdoors, stay low to the ground. • Limit the body surface area that is in contact with the ground (i.e., kneeling on one knee is better than laying on the ground). • Seek shelter in a building if possible. • Stay away from windows. • If available, crouch under a group of trees instead of one. • Keep all body parts in contact with the ground as close as possible. • Remain 6 feet away from tree trunk if seeking shelter beneath tree(s). • If in a group, keep 6 feet of distance between people.
	Thunderstorms, tornados	• Listen to radio or TV announcements for pending weather information. • Cease field activities during thunderstorm or tornado warnings. • Seek shelter. Do not try to outrun a tornado.
Surveying	Slip, trip, and fall hazards	• Site workers will be required to wear hard hat, safety glasses with side shields, work gloves, and steel-toe boots when working in the field. • Provide adequate lighting in all work areas. • Whenever possible, avoid routing cords and hoses across walking pathways. • Flag or cover inconspicuous holes to protect against falls. • Work areas will be kept clean and orderly. • Garbage and trash will be disposed of daily in approved refuse containers. • Tools and accessories will be properly maintained and stored. • Work areas and floors will be kept free of dirt, grease, and slippery materials.

Table 5-1

Activity Hazard Analysis
Fenced Area at Range J – Pelham Range, Parcel 202(7)
Fort McClellan, Calhoun County, Alabama

Activity	Potential Hazards	Recommended Controls
Surveying (continued)	Traffic accidents	• Place physical barrier (i.e., barricades, fencing) around work areas regularly occupied by pedestrians. • If working adjacent to roadways, have workers wear fluorescent orange vests. • Use warning signs or lights to alert oncoming traffic. • Assign flag person(s) if necessary to direct local traffic. • Set up temporary parking locations outside the immediate work area. • Motor vehicle operators shall obey all posted traffic signs, signals, and speed limits. • Pedestrians have the right-of-way. • Wear seat belts when vehicles are in motion.
	Wildlife hazards	• Workers should be cautious when driving through the site in order to avoid encounters with passing animals.
	Biological hazards	• Walking through overgrown grass areas, watch for snakes (rattlesnakes, moccasins, copperheads).
	Ticks	• Wear light colored clothing (can see ticks better). • Mow vegetated and small brush areas. • Wear insect repellant. • Wear long sleeves and long pants. • Visually check oneself promptly and frequently after exiting the work area.
	Poison ivy/oak/sumac	• Avoid plant areas if possible. • Wear long sleeves and long pants. • Promptly wash clothing that has contacted poisonous plants. • Wash affected areas immediately with soap and water.
	UXO	• UXO avoidance monitoring will be conducted by a UXO specialist prior to beginning activities. • If UXO is encountered, cease all activities, mark the location, and notify the site manager.

Table 5-1

Activity Hazard Analysis
Fenced Area at Range J – Pelham Range, Parcel 202(7)
Fort McClellan, Calhoun County, Alabama

Activity	Potential Hazards	Recommended Controls
Groundwater Sampling	Cross-contamination and contact with potentially contaminated materials	• Sampling technicians will wear proper protective clothing and equipment to safeguard against potential contamination. • Avoid skin contact with water. • Handle samples with care. • Only essential personnel will be in the work area. • Real-time air monitoring will take place before and during sampling activities. • All personnel will follow good hygiene practices. • Proper decontamination procedures will be followed. • All liquids and materials used for decontamination will be contained and disposed of in accordance with federal, state, and local regulations.
	Cut hazards	• Use care when handling glassware. • Wear adequate hand protection.
	Hazard communication	• MSDSs shall be obtained for chemicals brought on site. • Label all containers as to contents.
	Strains/sprains	• Use the proper tool for the job being performed. • Get assistance if needed. • Avoid twisting/turning while pulling on tools, moving equipment, etc.
	Spills/residual materials	• Absorbent material and containers will be kept available where leaks or spills may occur.
	Lighting	• Adequate lighting will be provided to ensure a safe working environment.
	Unattended worker	• Use "buddy system" - visual contact will be maintained with the sampling technician during sampling activities.

Table 5-1

Activity Hazard Analysis
Fenced Area at Range J – Pelham Range, Parcel 202(7)
Fort McClellan, Calhoun County, Alabama

Activity	Potential Hazards	Recommended Controls
Soil Boring and Surface/Subsurface Sampling	Cross-contamination and contact with potentially contaminated materials	• Stop immediately at any sign of obstruction. • Sampling technicians will wear proper protective clothing and equipment to safeguard against potential contamination. • Only essential personnel will be in the work area. • Real-time air monitoring will take place before and during sampling activities. • All personnel will follow good hygiene practices. • Proper decontamination procedures will be followed. • All liquids and materials used for decontamination will be contained and disposed of in accordance with federal, state, and local regulations.
	Cut hazards	• Use care when handling glassware. • Wear adequate hand protection.
	Slip, trip, and fall hazards	• Site workers will be required to wear hard hat, safety glasses with side shields, work gloves, and steel-toe/shank boots when working in the field. • Whenever possible, avoid routing cords and hoses across walking pathways. • Flag or cover inconspicuous holes to protect against falls.
	Bees, spiders, and snakes	• Workers shall inspect the work area carefully and avoid placing hands and feet into concealed areas. • Evaluate need for sensitive workers to have prescribed antibiotic or medicine to combat onset of symptoms.
	Poison ivy/oak/sumac	• Avoid plant areas if possible. • Wear long sleeves and long pants. • Promptly wash clothing that has contacted poisonous plants. • Wash affected areas immediately with soap and water.
	Cold stress	• Workers should wear insulated clothing when temperatures drop below 40°F. • Drink warm beverages on breaks. Refrain from drinking caffeinated beverages. • Remove wet clothing promptly. • Take breaks in warm areas. • Reduce work periods as necessary. • Layer work clothing.

Table 5-1

Activity Hazard Analysis
Fenced Area at Range J – Pelham Range, Parcel 202(7)
Fort McClellan, Calhoun County, Alabama

Activity	Potential Hazards	Recommended Controls
Soil Boring and Surface/Subsurface Sampling (continued)	Access/egress hazards	• Use qualified and trained bushhog operator. • Keep employees out of the bushhog work area. • Utilize good housekeeping practices. • Keep aisleways, pathways, and work areas free of obstruction. • Clean ice or snow off of walkways or work stations. • Use appropriate footwear for the task assigned.
	Heat rash	• Keep the skin clean and dry. • Change perspiration-soaked clothing, as necessary. • Bathe at end of work shift or day. • Apply powder to affected area.
	Heat cramps	• Drink plenty of cool fluids even when not thirsty. • Provide cool fluid for work crews. • Move victim to shaded, cool area.
	Heat exhaustion	• Conduct physiological worker monitoring as needed (i.e., heart rate, oral temperature). • Set up work/rest periods. • Use the buddy system. • Allow workers time to acclimate. • Have ice packs available for use. • Take frequent breaks.
	Heat stroke	• Evaluate possibility of night work. • Perform physiological monitoring on workers during breaks. • Wear body cooling devices.

Table 5-1

Activity Hazard Analysis
Fenced Area at Range J – Pelham Range, Parcel 202(7)
Fort McClellan, Calhoun County, Alabama

Activity	Potential Hazards	Recommended Controls
Soil Boring and Surface/Subsurface Sampling (continued)	Lightning strikes	• Whenever possible, halt activities and take cover. • If outdoors, stay low to the ground. • Limit the body surface area that is in contact with the ground (i.e., kneeling on one knee is better than laying on the ground). • Seek shelter in a building if possible. • Stay away from windows. • If available, crouch under a group of trees instead of one single tree. • Keep all body parts in contact with the ground as close as possible. • If in a group, keep 6 feet of distance between people.
	UXO	• UXO avoidance monitoring will be conducted by a UXO specialist prior to beginning activities. • If UXO is encountered, cease all activities, mark the location, and notify the site manager and UXO specialist.
	Accidental exposure to chemical agents	• Low-level real-time environmental monitoring will be performed by Quanterra Battelle Quicksilver Center. • Modified Level D personal protective equipment (PPE) will be required. During the first 15 feet depth of each monitoring well installation activity, downhole geophysics will be performed. • Engineering controls will be used as appropriate. • Personnel will be equipped with an emergency egress air supply pack.
Moving and Shipping Collected Samples	Heavy lifting	• Use proper lifting techniques. Lifts greater than 60 pounds require assistance or mechanical equipment; size up the lift.
	Pinch points	• Keep hands, fingers, and feet clear of moving/suspended materials and equipment. • Beware of contact points. • Stay alert at all times!
	Cut hazards	• Wear adequate hand protection. Use care when handling glassware.
	Hazard communication	• Label all containers as to contents and associated hazards.
	Heavy lifting	• Use proper lifting techniques. Lifts greater than 60 pounds require assistance or mechanical equipment; size up the lift.

Table 5-1

Activity Hazard Analysis
Fenced Area at Range J – Pelham Range, Parcel 202(7)
Fort McClellan, Calhoun County, Alabama

Activity	Potential Hazards	Recommended Controls
Material Storage	Flammable and combustible liquids	• Store in NO SMOKING AREA. • Fire extinguisher readily available. • Transfer only when properly grounded and bonded.
Disposal of Investigation-Derived Waste (IDW) (Forklift Operation)	Personnel injury, property damage, and/or equipment damage	• Use qualified and trained forklift operators. • The operator shall not exceed the load capacity rating for the forklift. • The load capacity shall be clearly visible on the forklift. • Forklift operators shall inform their supervisor of any prescribed medication that they are taking that would impair their judgement.
	Cross-contamination and contact with potentially contaminated materials	• Stop immediately at any sign of obstruction. • Sampling technicians will wear proper protective clothing and equipment to safeguard against potential contamination. • Only essential personnel will be in the work area. • Real-time air monitoring will take place before and during sampling activities. • All personnel will follow good hygiene practices. • Proper decontamination procedures will be followed. • All liquids and materials used for decontamination will be contained and disposed of in accordance with federal, state, and local regulations.
	Cut hazards	• Use care when handling glassware. • Wear adequate hand protection.
High-Pressure Water Jetting Operations	Heavy lifting	• Use proper lifting techniques. • Lifts greater than 60 pounds require assistance or mechanical equipment; size up the lift.
	Slip, trip, and fall hazards	• Good housekeeping shall be implemented. • The work area shall be kept clean as feasible. • Inspect the work area for slip, trip, and fall hazards.

Table 5-1

Activity Hazard Analysis
Fenced Area at Range J – Pelham Range, Parcel 202(7)
Fort McClellan, Calhoun County, Alabama

Activity	Potential Hazards	Recommended Controls
High-Pressure Water Jetting Operations (continued)	Fueling	• Only approved safety cans shall be used to store fuel. • Do not refuel equipment while it is operating. • Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.
	Faulty or damaged equipment	• Equipment shall be inspected before being placed into service and at the beginning of each shift. • Preventive maintenance procedures recommended by the manufacturer shall be followed. • A lockout/tagout procedure shall be used for equipment found to be faulty or undergoing maintenance.
	High-pressure water	• Jetting gun operator must wear appropriate PPE including hard hat, impact-resistant safety glasses with side shields, water-resistant clothing, metatarsal guards for feet and legs, and hearing protection (if appropriate). • One standby person shall be available within the vicinity of the pump during jetting operation. • The work area shall be isolated and adequate barriers will be used to warn other site personnel.
	Unqualified operators	• Only qualified and trained personnel are permitted to operate machinery and mechanized equipment associated with water jet cutting and cleaning.
	Out of control equipment	• No machinery or equipment is permitted to run unattended. • Machinery or equipment will not be operated in a manner that will endanger persons or property nor will the safe operating speeds or loads be exceeded.
	Noise	• Sound levels above 85 dBA mandates hearing protection by nearby site personnel.
	Activation during repairs	• All machinery or equipment will be shut down and positive means taken to prevent its operation while repairs or manual lubrications are being done.
	Pinch points	• Keep feet and hands clear of moving/suspended materials and equipment. • Stay alert and clear of materials suspended .
	Falling objects	• Hard hats are required by site personnel. • Stay alert and clear of material suspended overhead.
	Flying debris	• Impact-resistant safety glasses with side shields are required.

Table 5-1

Activity Hazard Analysis
Fenced Area at Range J – Pelham Range, Parcel 202(7)
Fort McClellan, Calhoun County, Alabama

Activity	Potential Hazards	Recommended Controls
High-Pressure Water Jetting Operations (continued)	Contact with potentially contaminated materials	• All site personnel will wear the appropriate PPE.
Hydropunch Sampling	Faulty or damaged equipment being utilized to perform work	• All machinery or mechanized equipment will be inspected by a competent mechanic and certified to be in safe operating condition. • Equipment will be inspected before use and at the beginning of each shift. • Faulty/unsafe equipment will be tagged and if possible locked out. • Drill rigs shall be equipped with reverse signal alarm, backup warning lights, or the vehicle is backed up only when an observer signals it is safe to do so.
	Uneven terrain, poor ground support, inadequate clearances, contact with utilities	• Inspections or determinations of road conditions and structures shall be made in advance to ensure that clearances and load capacities are safe for the passage or placing of any machinery or equipment. • All mobile equipment and areas in which they are operated shall be adequately illuminated. • Whenever the equipment is parked, the parking brake shall be set. • Equipment parked on inclines will have the wheels chocked. • Inspect brakes and tire pressure on drill rig before staging for work. • Obtain trenching/drilling permit prior to operation.
	Inexperienced operator	• Machinery and mechanized equipment shall be operated only by designated personnel. • Heavy equipment operators shall inform their supervisor(s) of any prescribed medication that they are taking that would impair their judgement.
	Jacks/outriggers	• Ensure proper footing and cribbing.
	Falling objects	• Remove unsecured tools and materials before raising or lowering the derrick. • Stay alert and clear of materials suspended overhead.

Table 5-1

Activity Hazard Analysis
Fenced Area at Range J – Pelham Range, Parcel 202(7)
Fort McClellan, Calhoun County, Alabama

Activity	Potential Hazards	Recommended Controls
Hydropunch Sampling (continued)	Pinch points	• Keep feet and hands clear of moving/suspended materials and equipment. • Stay alert at all times!
	Fire	• Mechanized equipment shall be shut down prior to and during fueling operations. • Have fire extinguishers inspected and readily available.
	Fall hazards	• Personnel are not allowed to work off of machinery or use them as ladders. • Use fall protection when working above 6 feet.
	Noise	• Hearing protection is mandatory above 85 dBA.
	Contact with rotating or reciprocating machine part	• Use machine guards; use long-handled shovels to remove auger cuttings. • Safe lockout procedures for maintenance work.
	Heavy lifting	• Use proper lifting techniques. Lifts greater than 60 pounds require assistance or mechanical equipment; size up the lift.
	Slip, trip, and fall hazards	• Practice good housekeeping; keep work area picked up and clean as feasible. • Continually inspect the work area for slip, trip, and fall hazards.
	Contact with potentially contaminated materials	• Real time air monitoring will take place. If necessary, proper personal protective clothing and equipment will be utilized.
	UXO	• UXO avoidance monitoring will be conducted by a UXO specialist prior to beginning activities. • If UXO is encountered, cease all activities, mark the location, and notify the site manager and UXO specialist.
	Accidental exposure to chemical agents	• Low-level real-time environmental monitoring will be performed by Quanterra Battelle Quicksilver Center. • Modified Level D personal protective equipment (PPE) will be required. During the first 15 feet depth of each monitoring well installation activity, downhole geophysics will be performed. • Engineering controls will be used as appropriate. • Personnel will be equipped with an emergency egress air supply pack.

Table 5-1

Activity Hazard Analysis
Fenced Area at Range J – Pelham Range, Parcel 202(7)
Fort McClellan, Calhoun County, Alabama

Activity	Potential Hazards	Recommended Controls
Drilling and Installation of Monitoring Wells	Overhead hazards	• Make sure no obstacles are within radius of boom. Always stay a safe distance from power lines.
	Faulty or damaged equipment being utilized to perform work	• All machinery or mechanized equipment will be inspected by a competent mechanic and be certified to be in safe operating condition. • Equipment will be inspected before being put to use and at the beginning of each shift. • Faulty/unsafe equipment will be tagged and if possible locked out. • Drill rigs shall be equipped with reverse signal alarm, backup warning lights, or the vehicle is backed up only when an observer signals it is safe to do so.
	Uneven terrain, poor ground support, inadequate clearances, contact with utilities	• Inspections or determinations of road conditions and structures shall be made in advance to ensure that clearances and load capacities are safe for the passage or placing of any machinery or equipment. • All mobile equipment and areas in which they are operated shall be adequately illuminated. • Aboveground and belowground utilities will be located prior to staging equipment. • Whenever the equipment is parked, the parking brake shall be set. • Equipment parked on inclines will have the wheels chocked. • Inspect brakes and tire pressure on drill rig before staging for work.
	Inexperienced operator	• Machinery and mechanized equipment shall be operated only be designated personnel. • Operators shall inform their supervisor(s) of any prescribed medication that they are taking that would impair their judgment.
	Jacks/outriggers	• Ensure proper footing and cribbing.
	Falling objects	• Remove unsecured tools and materials before raising or lowering the derrick. • Stay alert and clear of materials suspended overhead.
	Pinch points	• Keep feet and hands clear of moving/suspended materials and equipment. • Stay alert at all times!
	Fire	• Mechanized equipment shall be shut down prior to and during fueling operations. • Have fire extinguishers inspected and readily available.

Table 5-1

Activity Hazard Analysis
Fenced Area at Range J – Pelham Range, Parcel 202(7)
Fort McClellan, Calhoun County, Alabama

Activity	Potential Hazards	Recommended Controls
Drilling and Installation of Monitoring Wells (continued)	Fall hazards	• Personnel are not allowed to work off of machinery or use them as ladders. • Use fall protection when working above 6 feet
	Contact with rotating or reciprocating machine parts	• Use machine guards; use long-handled shovels to remove auger cuttings. • Safe lockout procedures for maintenance work.
	Heavy lifting	• Use proper lifting techniques. Lifts greater than 60 pounds require assistance or mechanical equipment; size up the lift.
	Slip, trip, and fall hazards	• Practice good housekeeping, keep work area picked up and clean as feasible. • Continually inspect the work area for slip, trip, and fall hazards.
	Contact with potentially contaminated materials	• Real-time air monitoring will take place. If necessary, proper personal protective clothing and equipment will be utilized. • Stop immediately at any sign of obstruction. • Do not breathe air surrounding boring unless necessary. • Upgrade to respirator if necessary. • Avoid skin contact with soil cuttings. Wear gloves. • Stay clear of moving parts of drill rig.
	Drum handling	• Be careful not to breathe air from around open drum any more than necessary. Monitor with photoionizaton detector/flame ionization detector (PID/FID) equipment and upgrade to respirator if necessary. • When filling a drum (with either soil or water), be careful not to make contact with the contained waste. Wear appropriate gloves. Make sure lid or bung of drum is secure. • If moving a drum unassisted, be sure to leverage properly, use proper lifting techniques, and wear safety glasses and steel-toed boots. • When using a drum dolly, make sure straps and lid catch are securely attached. Leverage properly when tilting drum. Be sure toes stay away from drum.
	UXO	• UXO avoidance monitoring will be conducted by a UXO specialist prior to beginning activities. • If UXO is encountered, cease all activities, mark the location, and notify the site manager and UXO specialist immediately.

Table 5-1

Activity Hazard Analysis
Fenced Area at Range J – Pelham Range, Parcel 202(7)
Fort McClellan, Calhoun County, Alabama

Activity	Potential Hazards	Recommended Controls
Drilling and Installation of Monitoring Wells (continued)	Accidental exposure to chemical agents	• Low-level real-time environmental monitoring will be performed by Quanterra Battelle Quicksilver Center. • Modified Level D personal protective equipment (PPE) will be required. During the first 15 feet depth of each monitoring well installation activity, downhole geophysics will be performed. • Engineering controls will be used as appropriate. • Personnel will be equipped with an emergency egress air supply pack.

PELHAM RANGE

MAIN POST

CHOCCOLOCCO CORRIDOR

OLD WATER HOLE

RANGE K

RANGE L

RANGE J

GATE 1

GATE 2

GATE 3

GATE 4

GALLOWAY GATE

BALTZELL GATE

SUMMERAL GATE

LANDFILL NO. 1

LANDFILL NO. 2

LANDFILL NO. 3

U.S. ARMY NOBLE HOSPITAL

STUMP DUMP

FORMER SMOKE AREA SOUTH SLOPE MORGAN MOUNTAIN

FORMER SMOKE AREA CHOCCOLOCCO CORRIDOR

GROUND SCAR WITH PROBABLE TRENCHES AT DRIVING COURSE

RANGE 24A FOG OIL DRUM STORAGE

NORTHEAST ALABAMA REGIONAL MEDICAL CENTER

LEGEND:

- ROUTE TO NORTHEAST ALABAMA REGIONAL MEDICAL CENTER
- U.S. HIGHWAY
- HOSPITALS
- INVESTIGATION SITES

FIRE DEPT. PHONE NUMBER: (205) 848-5936

SCALE

0 8000 16000 FEET

FIGURE 1
HOSPITAL EMERGENCY ROUTES

U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT McCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018

INTERNATIONAL TECHNOLOGY CORPORATION

DRAFT. CHCK. BY:
ENGR. CHCK. BY: A. MAYILA
DRAWN BY:
DRAWN BY: D. BILLINGSLEY
INITIATOR: A. MAYILA
PROJ. MGR.: J. YACOUB
DWG. NO.: 774645es.218
PROJ. NO.: 774645
DATE LAST REV.:
STARTING DATE: 8/26/98
02/23/04
10:29:55 AM
jwaters
774645es.218

DRAFT REMEDIAL INVESTIGATION WORK PLAN
RANGE J - PELHAM RANGE, PARCEL 202(7)
RESPONSE TO COMMENTS
BY ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

Reference: Comments by Chris Johnson, dated September 25, 1998.

General Comments

Comment 1: **The title to this document should be clarified. Based on the previous work effort, the scope and objectives of this work effort, and new information obtained about the site, the Department understands this to be a Draft Remedial Investigation Work Plan. The Department would agree that we are in the RI phase for the fenced area and immediate area just outside the fenced area within Range J (170 acres). However, for the remaining property within Range J (approx. 169 acres) it appears we are still at the PA/SI level. Please clarify.**

Response: At this point, an RI is planned only for the fenced area. Other activities at Range J have not been scoped or agreed upon.

Comment 2: **In order to accurately prepare and/or review a work plan, the size of the area to be investigated must be provided. Currently, the Department is unclear as to the size of the area(s) to be investigated. The term "Range J" has been used throughout the work plan to describe three different possibilities, namely 1) the fenced area containing possible HD burial and trenches (.16 acres), the larger training area surrounding the fenced area (60 acres), and an even larger training area based on EPIC photos (170 acres).**

Response: The term "Range J" has been used to describe each of the three sizes mentioned above. It is our belief that the fenced area is all that remains of a much larger former "Range J." The size of the area to be investigated is 0.16 acres (the fenced area).

Comment 3: **The Department is unclear as to how and why the former investigations were so narrowly focused. In other words, of all the activities that occurred within Range J (170 acres), how did the investigations evolve to focus only on the fenced area (.16 acres)? Was the Army only concerned about HD burials? Was this the only CWM training area within the 170-acre range? Where does the fenced area reside within the 170 acres? What other areas of potential concern exist within the 170 acres? Please clarify.**

Response: The previous investigations (and this investigation) were focused on the fenced area where HD-contaminated soils (after they were decontaminated) were disposed.

Comment 4: **The aerial photographs are extremely helpful in determining former training activities and the locations in which they occurred. However, the problem is trying to understand the relationship between the previously investigated area (fenced area) versus the areas of potential concern depicted in the aerial photographs, i.e. ground stains, mounded material, and tanks. Please revise all drawings to communicate where the former and proposed sampling locations reside in relationship to the areas of concern depicted in the aerial photographs.**

Response: Figures 1-2 and 4-1 will be revised to show the features that correlate to the fenced area and the immediate area.

Comment 5: **If this is being investigated under DERA, then why does it have a CERFA Parcel number?**

Response: Every site that was of potential concern at FTMC, regardless of whether it is a CERFA or DERA site, was given a CERFA number.

Comment 6: **The current and future use of this site will be critical in evaluating risk and making risk management decisions. The Army should provide clear documentation to the Department regarding current and future use of the property.**

Response: The Army will provide documentation regarding the current and future use of the property.

Specific Comments

Comment 1: **Page 1-1, Section 1.1, Lines 13-17: The Department reads this to be the objectives of this work plan. Objective and/or purpose statements should not be buried within other sections, i.e. the Introduction. For clarification to the reader, the objective statement should be identified under a separate section number. Please revise.**

Response: These documents (all of the previous FTMC SFSPs) have been prepared in the same format. We do not understand why, after review of so many documents, ADEM would like to change the format. At this time we do not plan on revising this section.

Comment 2: **Page 1-2, Section 1.2. The history of Fort McClellan is well documented in the EBS and the Installation-Wide Work Plan, therefore we recommended deleting such text from the work plan. If you wish to leave it in, please segregate the description and history of Range J versus Fort McClellan in order to provide clarification to the reader.**

Response: Range J is a part of Fort McClellan. Therefore, IT feels this information is necessary for the reader. The section will be reorganized to separate what is specific to Range J.

Comment 3: **Page 2-1, Section 2.0, Lines 3-34: The Department is unclear how this site falls under the framework of CERFA. Please clarify.**

Response: All sites of potential concern were given a CERFA number regardless if it was a DERA or CERFA site.

Comment 4: **Page 2-5, Section 2.0, Line 6: How are the organic solvents detected at Range J associated with STB and DS2?**

Response: An explanation of how organic solvents detected at Range J are associated with DS-2 is presented on pages ES-1, 2-3, and 2-4.

Comment 5: **Table 3-1. If the area(s) and sources of contamination to be investigated are unknown, then how can we limit the contaminant sources, migration pathways, media of concern, sample size and analytical methods? The Department is unclear as to how and why the former investigations were so narrowly focused. In other words, of all the activities that occurred within Range J (170 acres), how did the investigations evolve to focus only on the fenced area (.16 acres)? Was the Army only concerned about HD burials? Was this the only CWM training area within the 170-acre range? What other areas of potential concern exist within the 170 acres? Please clarify.**

Response: The previous investigations were focused on the fenced area where HD-contaminated soils (after they were decontaminated) were disposed.

Comment 6: **Page 3-2, 3.3, Line 23: The receptors under the current site use should be groundskeeper, military trainee (based on training activities provided by the Army), construction worker, and recreational site user.**

Line 33: The Department does not agree that the recreational user is not likely. In fact, hunting is routinely allowed at many ranges throughout Pelham Range

Line 36: The Army must provide future land use, regardless if the property is being retained. See general comment # 5.

Response: Line 23: It is not anticipated that there will be any military training activities inside the fenced area.

Line 33: The area is fenced; therefore, hunting will not occur inside the 0.16-acre area.

Line 36: See response to General Comment No. 6.

Comment 7: **Page 3-3, Section 3.4.1, Lines 13-14: This site should be screened for both human health and ecological evaluations in the same manner as all other BRAC sites. Please revise text to be more specific as to the screening methodology and risk assessment methodology that will be used for Range J.**

Response: Range J will be screened for both human health and ecological evaluations in the same manner as all other BRAC sites.

Comment 8: **Figure 3-1. See general comment # 2. The Human Health Conceptual Site Exposure Model cannot be completed until the boundaries of the area(s) being investigated are defined.**

Response: The site is contained inside the fenced area. Therefore, the site is 0.16 acres.

Comment 9: **Page 4-1, Section 4.0. The adequacy of the sampling plan cannot be measured until a better understanding of Range J and its associated activities is brought to light. Therefore, until the above concerns are addressed, the sampling plan remains to be discussed and resolved.**

Response: Comment noted.

DRAFT REMEDIAL INVESTIGATION WORK PLAN
RANGE J - PELHAM RANGE, PARCEL 202(7)
RESPONSE TO COMMENTS
BY U.S. ENVIRONMENTAL PROTECTION AGENCY

Reference: *Comments by Bart Reedy, EPA, dated September 24, 1998.*

Overall Technical Comments

General Comments

Comment 1: **Neither the extent of area to be investigated nor the reason for conducting the investigation are clear. It appears, from the aerial photographs included in this FSP, that activities at Range J encompassed up to 170 acres. However, the FSP includes plans that focus on a single 139 foot by 50 foot fenced area where contaminated soils and spent decontamination solutions were disposed. Since the name of the site is "Range J," the text should provide the rationale for focusing this investigation on the fenced area. The rationale should justify not investigating all of Range J.**

Response: The text will provide rationale for focusing this investigation on the fenced area. Additionally, the text will include justification for not investigating all of Range J.

Specific Comments

Range J - Pelham Range, Parcel 202(7)

Comment 1: **Executive Summary, Page ES-3. The last sentence of the first full paragraph on this page states that "Historical evidence suggests that this larger training area was used for tear gas training." The text should discuss exact historical evidence suggesting this use and whether this area was limited to such use. This should also be reiterated in Section 1.2, which describes the site and its history.**

Response: The historical evidence includes the aerial photographs, the EBS (ESE, 1998), and SAIC (1993, 1995) reports. There does not appear to be other information available outside of what is presented in the document.

Comment 2: **Figure 1-2. The single dashed line across the northwest corner of this figure is not defined in the legend. The legend should explain this feature. Also, neither the text nor any figure shows the location of this fenced area within the larger 170-acre site. A figure should be included which shows the location of this fenced area.**

Response: The legend will be revised to show the single dashed line shown on Figure 1-2 is a dirt road.

Comment 3: **Section 4.2.1, Page 4-1. The text states that samples will be collected at Range J to determine whether Range J is the source of volatile organic compounds (VOCs). This is confusing since activities proposed in this FSP appear to concentrate on the fenced area. To add to this confusion, three different areas (1/4 acre fenced area, the 60 acre area and the 170 acre area) are mentioned. The relationship between the three areas mentioned should be clarified. If the intent of this FSP is to concentrate on the fenced area and not cove any other portions of Range J, the text should clearly state this.**

Response: The intent of this FSP is to concentrate on the fenced area. The text will be revised to state that this document will not cover any other portion of the site.

Comment 4: **Section 4.2.2.2, Page 4-2. The text should state that a detailed geologic log will be recorded as each borehole is advanced to serve as an aide to the on-site geologist in deciding the following:**

- **The necessity for selecting additional sampling location, or**
- **Altering the planned sampling depth.**

Response: The text will be revised to incorporate the above recommendations.

Comment 5: **Section 4.2.3, Page 4-3. The text states ". . . based on previous SAIC investigations, it appears that groundwater may, or may not, be present in the residuum overlying the bedrock at Range J." At least one residuum monitoring well where groundwater was detected previously (RJ-G06) was installed during previous investigations. In addition, additional residuum monitoring wells are planned. Therefore, residuum groundwater apparently does exist. The text should contain a more definitive statement on the existence of residuum groundwater.**

Response: The text will be revised to state that contaminated groundwater may or may not be present in the residuum overlying the bedrock at Range J.

Comment 6: **Section 4.2.3, Page 4-3. The text states that residuum monitoring wells will be installed approximately 200 to 300 feet radially away from the chain link fence in all directions, to determine the groundwater flow direction. According to Figure 4-2, however, no bedrock wells are proposed for the area north of this fenced area and neither residuum nor bedrock wells are proposed for the area northeast of the fenced area. An additional well pair (residuum and bedrock) should be installed in the northeast quadrant of the site to more completely define the groundwater flow direction across the site.**

Response: Monitoring wells are not proposed to be installed northeast of the fenced area for two reasons: (1) the topography in the area indicates that the direction of groundwater flow in the residuum would not be to the northeast; (2) regional groundwater flow in bedrock is to the northwest.

Comment 7: **Section 4.2.3.2, Page 4-4. The text should include additional detail regarding well construction, including information on the gravel pack, annular seal, and installation techniques.**

Response: As stated on the bottom of page 4-4, the residuum monitoring wells will be drilled and installed in accordance with Section 4.8 and Appendix C of the installation-wide SAP.

Comment 8: **Section 4.2.3.3, Page 4-5. This section discusses bedrock monitoring wells. The air rotary drilling technique will be used for bedrock drilling. The text should address how several potential problems associated with using air rotary techniques will be handled, particularly with respect to sampling for VOCs and semivolatile organic compounds (SVOCs). The points which should be addressed are:**

- **The text should address the mitigation of the problem of compressed air reducing VOC concentrations in groundwater.**
- **Since compressed air and the drill bit may also carry oil downhole, the text should explain how the compressed air and lubricants used in the percussion drill bit will be kept free of petroleum lubricants.**
- **The text should state how the core barrel will be lubricated while it is cutting bedrock cores.**
- **The text should include additional detail regarding how the discharge will be controlled while drilling below the water table. Monitoring the discharge for VOCs is advisable and drumming the investigation derived waste water may be required.**
- **The text should include the weight specification (in pounds per gallon) of the cement/bentonite grout and state that the slurry will be weighed in the field to assure a sufficient percentage of solids in the grout.**

Response: The text will be revised to discuss the topics mentioned above.

Risk Assessment Comments

General Comments

Comment 1: **In the Site-Specific Safety and Health Plans (SSHP), a table is included that summarizes toxicological and physical properties of chemicals that**

may be encountered during the site investigation. Some of the references cited in the tables have more recent updates. Specifically, the NIOSH Pocket Guide to Chemicals and the ACGIH Guide to Occupational Exposure Values have been updated more recently than the references cited. Recent versions of these sources should be used to ensure that information presented in the tables, such as time weighted averages, short term exposure limits, etc., reflect the most current values.

Response: The SSHPs will be updated with the most recent references.

Comment 2: **The collection of surface soil samples is not proposed for areas outside of the fence. Carbon tetrachloride has been detected in monitoring wells RJ-G05 and RJ-G07, which are located outside of the fenced-in area. Therefore, there is a potential for soil contamination in these areas. Surface soil samples should be collected for carbon tetrachloride and other chemical analysis. This will provide a better surface soil exposure characterization for the risk assessment. Also, soil samples should be collected from the borings during the installation of new monitoring wells.**

Response: The focus of this investigation is the area inside the fence. Therefore, surface soil samples outside the fence are not included at this time.

Specific Comments

Comment 1: **Page 3-2, Section 3.3. The section presents a discussion of the conceptual site exposure model for Parcel 143. It is stated in the text that plausible receptors under current site-use scenario include the groundskeeper and the construction worker. However, the text fails to include the youthful visitor that has also been identified as a receptor under current site conditions. Information on the youthful visitor should be included in this section of the text.**

Response: Parcel 143 is not located in Range J.

Comment 2: **Figure 3-1. The figure presents the human health conceptual site exposure model developed for the site. According to the model, inhalation of potential contaminants in surface soil is considered to be a complete exposure pathway for the future on-site resident, although considered to be insignificant. The rationale for this assumption should be provided in the text.**

Response: The pathway is completed because nothing stands between the resident receptor who comes into contact with soil around the home and volatile emissions from potential contaminants in the soil. The pathway is considered insignificant because it is extremely unlikely that volatile chemicals still exist in surface soil after 35 years.

DRAFT REMEDIAL INVESTIGATION WORK PLAN
RANGE J
RESPONSE TO COMMENTS
BY U.S. CORPS OF ENGINEERS, MOBILE DISTRICT

Reference: *Comments by Ellis Pope, USACE, Mobile District, dated September 26, 1998.*

Comment 1: **Page ES-1. Based on conversations between the Corps of Engineers, IT, and Gannett Fleming, the number of surface and subsurface soil samples within the fenced area has been reduced from 20 each to 16 each. This is a global change for the whole document.**

Response: The text will be revised to state that 16 subsurface soil and 16 surface soil samples will be collected.

Comment 2 **Page ES-2, Line 21. Acetylene tetrachloride is the same as 1,1,2,2-tetrachloroethane which is mentioned throughout the document. Suggest changing it here and including acetylene tetrachloride parenthetically.**

Response: A global change will be incorporated into the report that will read the compound "1,1,2,2-tetrachloroethane (acetylene tetrachloride)."

Comment 3: **Page ES-4, Line 6. Delete "STB". It was a water-based slurry or dry powder.**

Response: "STB" will be deleted.

Comment 4: **Page 1-2, Line 17. Delete "disposed". The drums were not corroded when they were disposed.**

Response: "Disposed" will be deleted.

Comment 5: **Table 1-1. Two different acronyms are used for "Ground Stain" (GS and GST).**

Response: The EPSC report legend states that both "GS" and "GST" denotes "Ground Stain." It is possible there is an error in the EPIC report and GS denotes "Ground Scar." The legend will be revised to define GS as ground scan.

Comment 6: **Page 1-4. Verify the dates in lines 30 and 32. One must be in error.**

Response: Agree. The dates will be verified and corrected.

Comment 7: **Page 2-2. There is a typo in line 14.**

Response: Agree. The spelling of p-chlorophenylmethylsulfone will be corrected.

Comment 8: **Page 2-3, Line 2. Change "USACE – Mobile District" to USAEC (Army Environmental Center). Mobile District was not involved in the previous project.**

Response: "USACE-Mobile District" will be changed to USAEC.

Comment 9: **Page 2-5, Line 6. Delete "STB" because it did not contain solvents.**

Response: "STB" will be deleted from the text.

Comment 10: **Page 4-2, Line 2. Suggest reviewing the soil volume requirements to determine if direct push is the best method for collecting the subsurface soil samples.**

Response: Soil volume requirements will be reviewed to determine if direct push is the best method for collecting subsurface soils.

Comment 11: **Page 4-3, Section 4.2.3. Need to include provisions for UXO avoidance and downhole UXO monitoring during drilling operations.**

Response: Provisions for UXO avoidance and downhole UXO monitoring will be added to the text.

Comment 12: **Page 4-4, Section 4.2.3.2, Line 26. Change "U.S. Classification Survey soil taxonomy" to "Unified Soil Classification System".**

Response: "U.S. Classification Survey soil Taxonomy" will be revised to state Unified Soil Classification System.

Comment 13: **Page 4-5, Section 4.2.3.3, Line 8. If paired wells are installed, install the residuum well first and split spooning deep wells is not necessary.**

Response: The residuum well will be installed first.

Comment 14: **Page 4-5, Section 4.2.3.3, Line 10. Size the auger to use HQ wireline core barrels; if rock is fracture, HQ will give much better recovery.**

Response: The auger will be sized to use HQ wireline core barrels.

Comment 15: **Page 4-6, Line 1. Include the sand gradation.**

Response: The sand gradation will be added to the text.

Comment 16: **Page 4-6, Line 3. Insert "with side discharge tremie" after "tremied in place".**

Response: The text will be revised as recommended.

Comment 17: **<u>Page 4-8, Line 13</u>. Something is missing in the sentence that begins "The MINICAMS is..."**

Response: The sentence will be revised to state "The MINICAMS is a real-time portable air analyzer that provides the concentration of agents in the vapor phase.

Comment 18: **<u>Page 4-9, Section 4.6</u>. How will the 48-hour holding times for VOCs in soil be met?**

Response: The first paragraph of Section 4.6 states that any delays in receiving data from Battelle may result in HTRW samples exceeding their recognized holding times.

Safety Plan

Comment 1: **The Safety Plan should be rewritten with emphasis on protection of workers from chemical agent hazards.**

Response: The safety plan will be rewritten to emphasize protection of workers from chemical agent hazards.

Comment 2: **<u>Table 2-1</u>. Chemical agents should be included.**

Response: Chemical agents will be included.

Comment 3: **<u>Page 5, Section 4.0, Line 5</u>. Chemical agents should be added.**

Response: Chemical agents will be added.